



# **Ecosystem based Disaster Risk Reduction**

Radhika Murti

Programme Coordinator, Disaster Risk Reduction  
IUCN Headquarters, Switzerland

# Western Indian Ocean 2004 – Sri Lanka





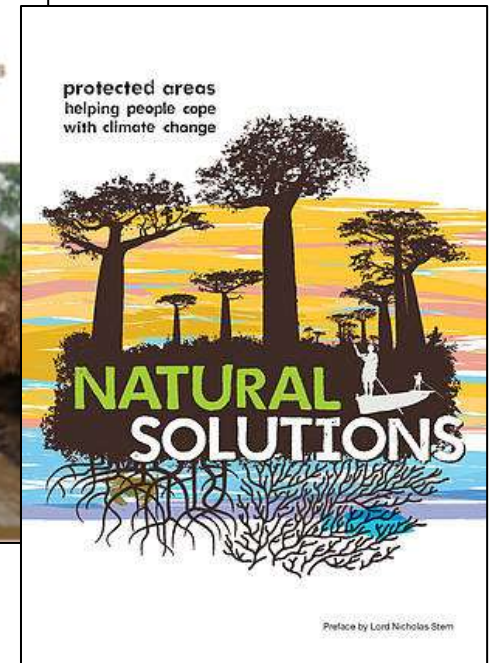
# IWRM - tropical storms and flooding in Guatemala/Mexico following Cyclone Stan, 2005



# Coastal Forests of Japan



# Key DRR publications



# Mandate from Members

## 2008

- Resolution 4.056 (2008) - *Conservation and Poverty Reduction*
- Resolution 4.057 (2008) – *Conservation of Pakistan’s coastal resources for future generations*
- Resolution 4.064 (2008) – *Integrated coastal management in the Mediterranean – the Barcelona Convention*
- Resolution 4.077 (2008) – *Climate change and Human Rights*

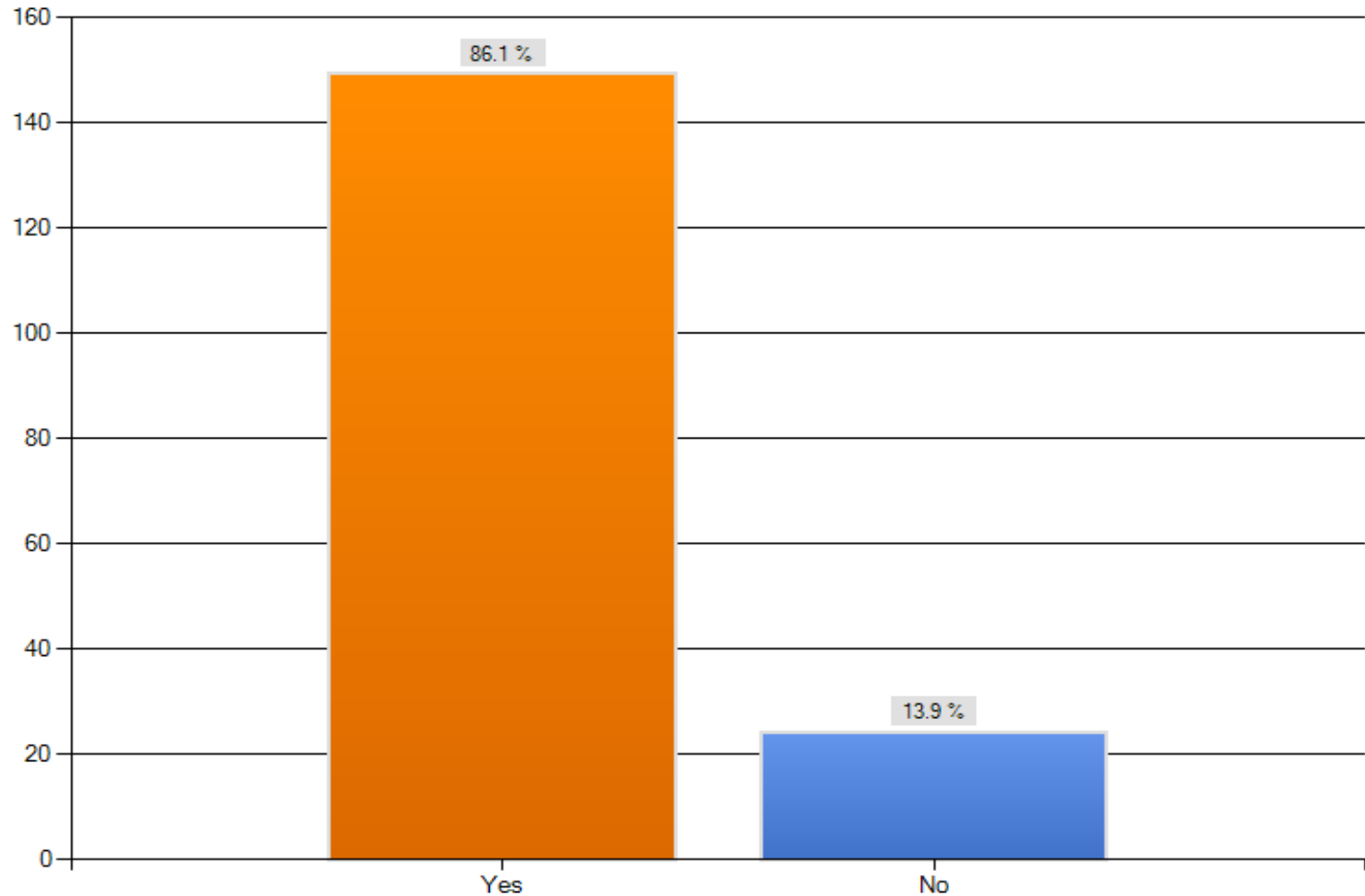
## 2012

- WCC-2012-Res-058-EN *Ecosystem Management for Disaster Risk Reduction*
- WCC-2012-Res-059-EN *The importance of adaptation and disaster risk reduction in coastal areas*



# IUCN-UNU-TNC Member Survey

Does your organization consider both environmental and disaster risk reduction objectives?



# Global Policy and Advocacy

- Inputs to the 2009 and 2011 Global Assessment Reports, *ecosystems as an existing management tool for DRR*
- Collaboration with UNISDR, UNU, UNDP and UNEP on promoting risk reduction and key global discussions – Global Platform
- Promoting joint approaches for conservation, DRR and CCA at UNFCCC CoP
- Discussions with UNISDR on joint advocacy for Ecosystems, Protected Areas and Disaster Risk Reduction:
  - 2014 World Parks Congress
  - 2015 World Disasters Conference





# Established Global Coordination – Partnership for Environment and Disaster Risk Reduction (PEDRR)





# Training for practitioners/policy makers on Ecosystem based Disaster Risk Reduction and Ecosystem based Adaptation

- ToT (x6 Asian countries), Sri Lanka, Japan, Georgia, Armenia, Azerbaijan, Thailand, Vietnam, Cambodia, India, Switzerland

(SDC)

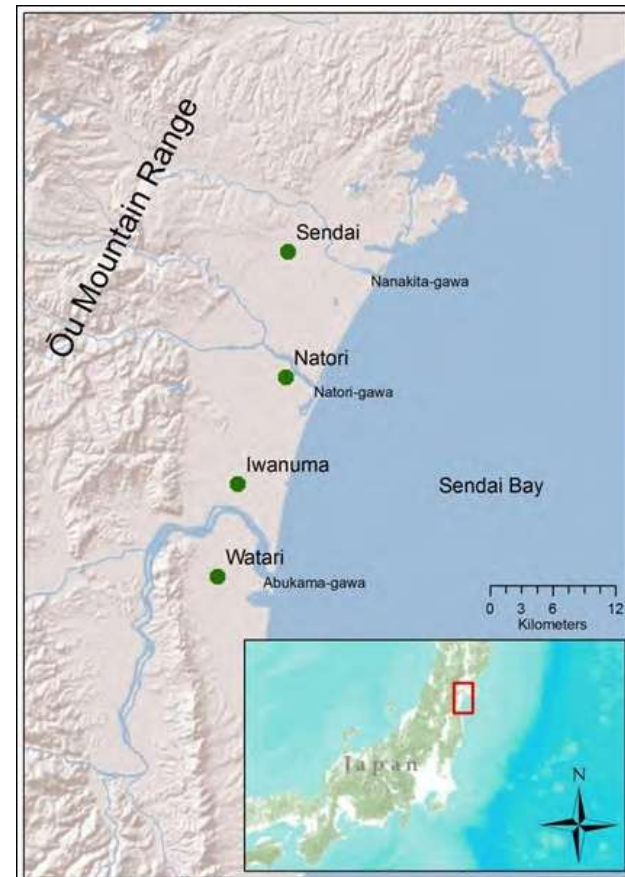
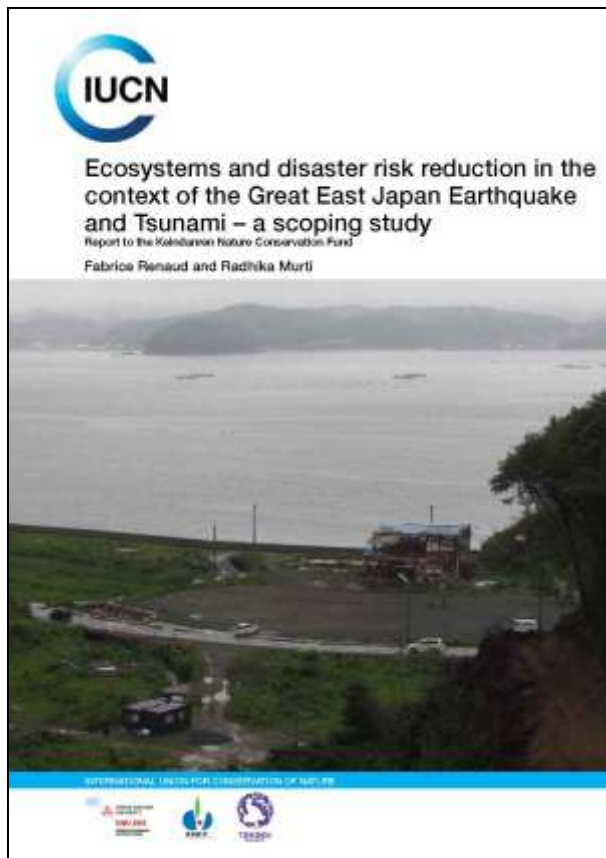
- Request for training (12 countries pending)



Developed by Partnership for Environment and Disaster Risk Reduction:



# KNCF: Documentation of Perceptions and Practices on Ecosystem Based Solutions for DRR in the Affected Areas



# Local Action – working with communities to reduce risks

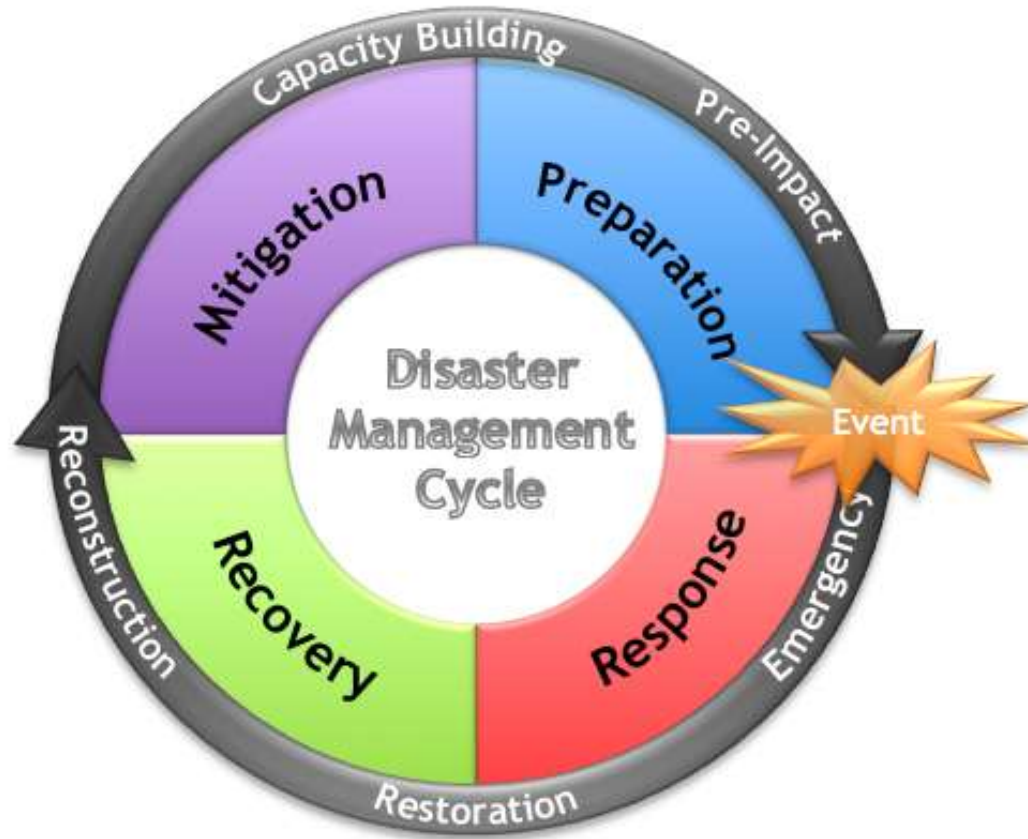




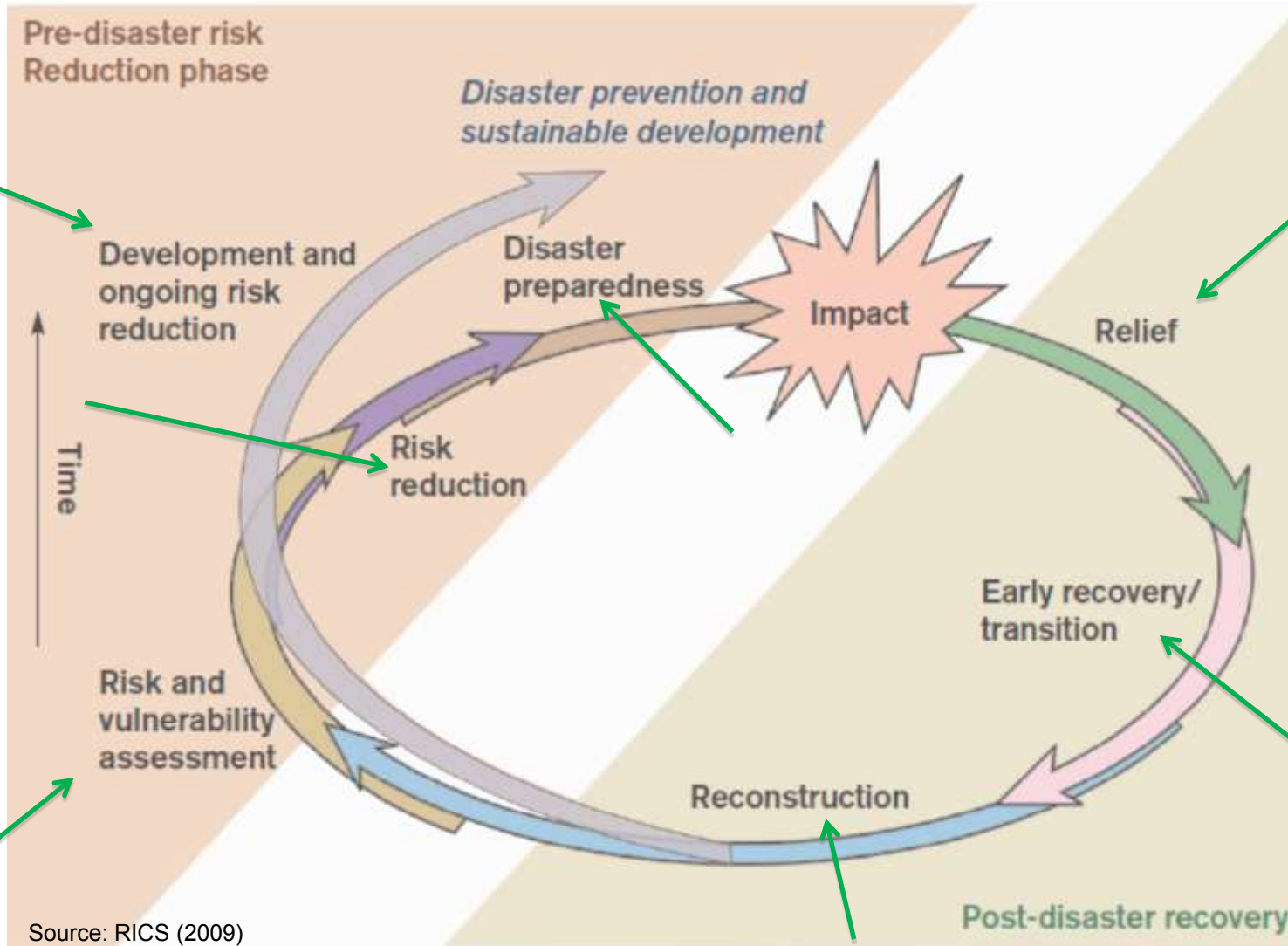
# Ecosystem based Disaster Risk Reduction?

**“Sustainable management, conservation and restoration of ecosystems to provide services that reduce disaster risk by mitigating hazards and by increasing livelihood resilience.”**

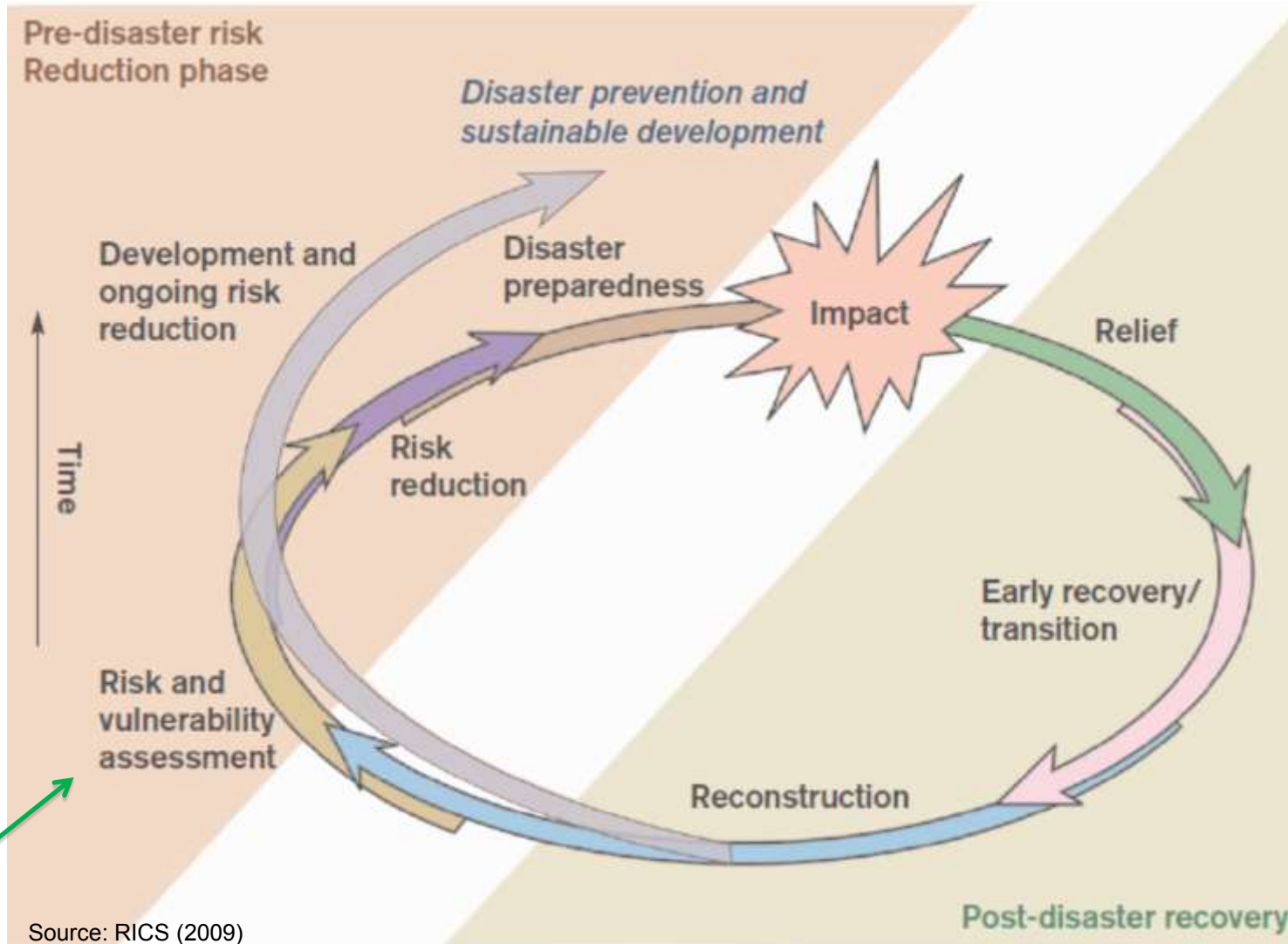
# Disaster Risk Reduction Cycle



# Entry points for Ecosystem based DRR



# Risk and Vulnerability Assessments

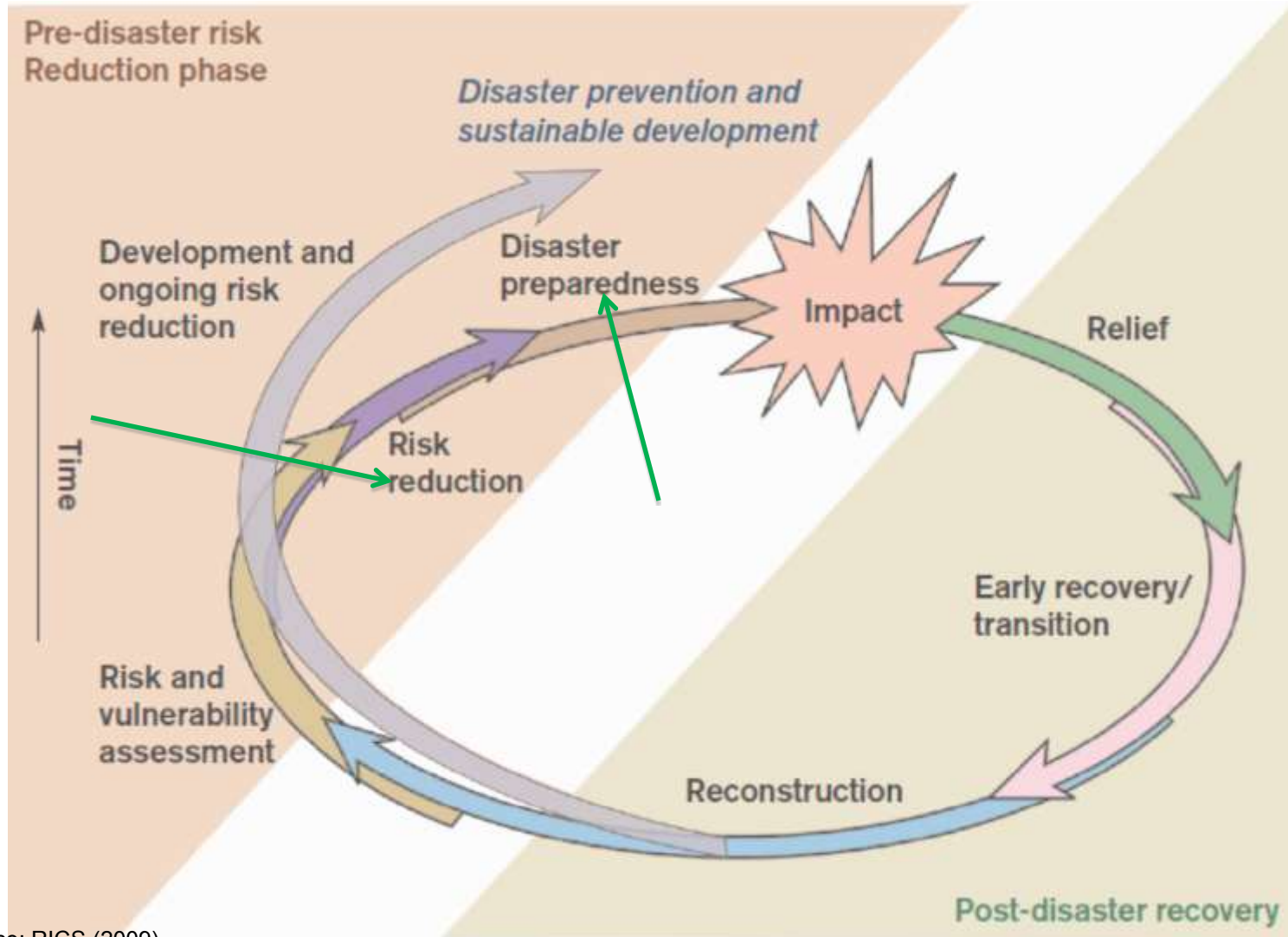




# Hazard and Vulnerability Assessments



# Risk Reduction and Preparedness



Source: RICS (2009)

# Vegetation stabilises slopes





# Wetlands and floodplains control floods



©Michel Gunther / WWF-Canon



# Mosaic landscaping for Fire Management - Lebanon





Mangroves, saltmarshes and sand dunes buffer from winds, sandstorms, storm surges



© M.Rautkari/WWF-Canon



## Existing Tools

- Integrated Coastal Zone Management
- Integrated Water Resource Management
- Integrated Fire Management
- Protected Area Management
- Community-based Natural Resource Management

## The role of Protected Areas:

### **Flooding**

- Provide space for floodwaters
- Absorb impacts of floods with natural vegetation
- Block sudden storm surges and sudden incursions of sea water (for coastal and marine ecosystems)

### **Landslides and Avalanches**

- Retain natural vegetation that helps to stabilize soil
- Tree crowns reduce the build-up of snow that triggers slippage
- Slow the movement and extent of damage once slippage is underway



## The role of Protected Areas:

### **Drought and Desertification**

- Reduce pressure (especially grazing pressures) on land and thus reduce or slow down desert formation
- Maintain populations of drought resistant plants to serve as emergency food during drought

### **Fire**

- Limit human encroachment into the most fire-prone areas
- Maintain traditional cultural management systems that apply ecologically sound and safe fire use and wildfire control
- Protect intact natural systems with associated natural fire regimes that ensure short- to long-term ecosystem stability

## The role of Protected Areas:

### Earthquakes

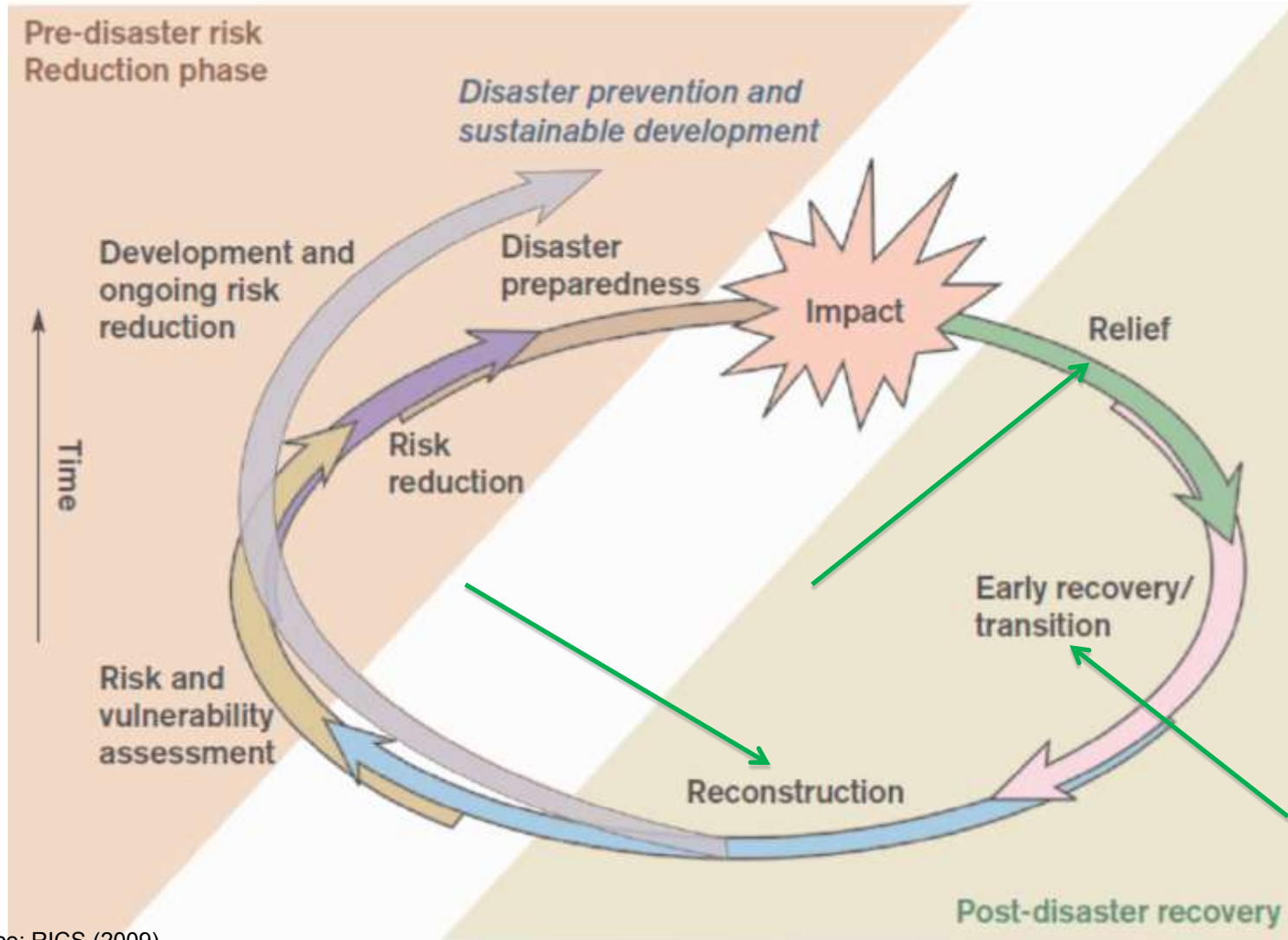
- Prevent or mitigate against associated hazards especially landslides and rock falls
- Provide zoning control to prevent settlement in the most earthquake prone areas

### Climate Change

- Mitigate climate change-induced hazards and other extreme events, such as more frequent or intense flooding, droughts, wildfires, and worsening storm surges

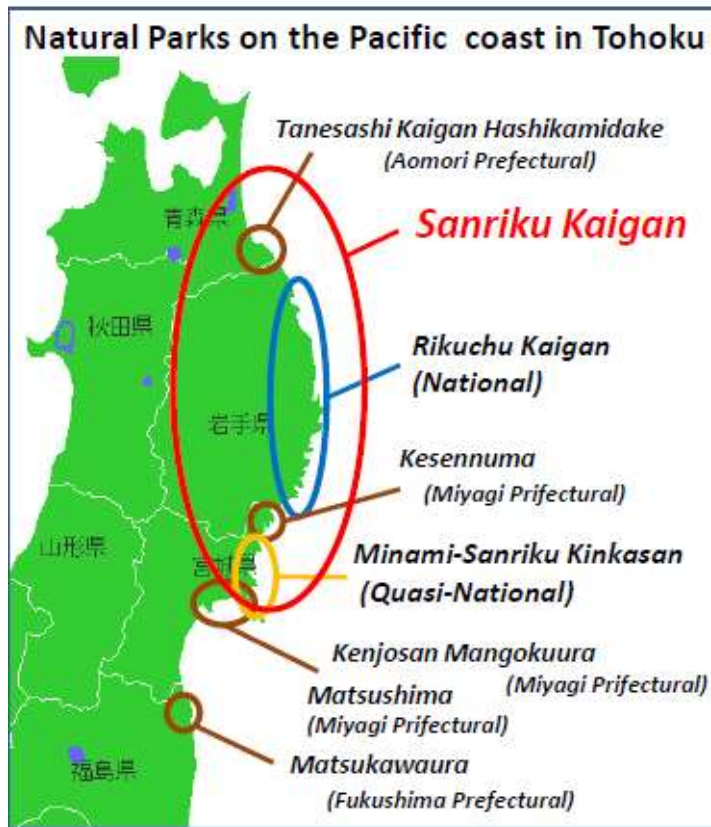


# Recovery and Reconstruction



Source: RICS (2009)

# Sanriku Reconstruction National Park

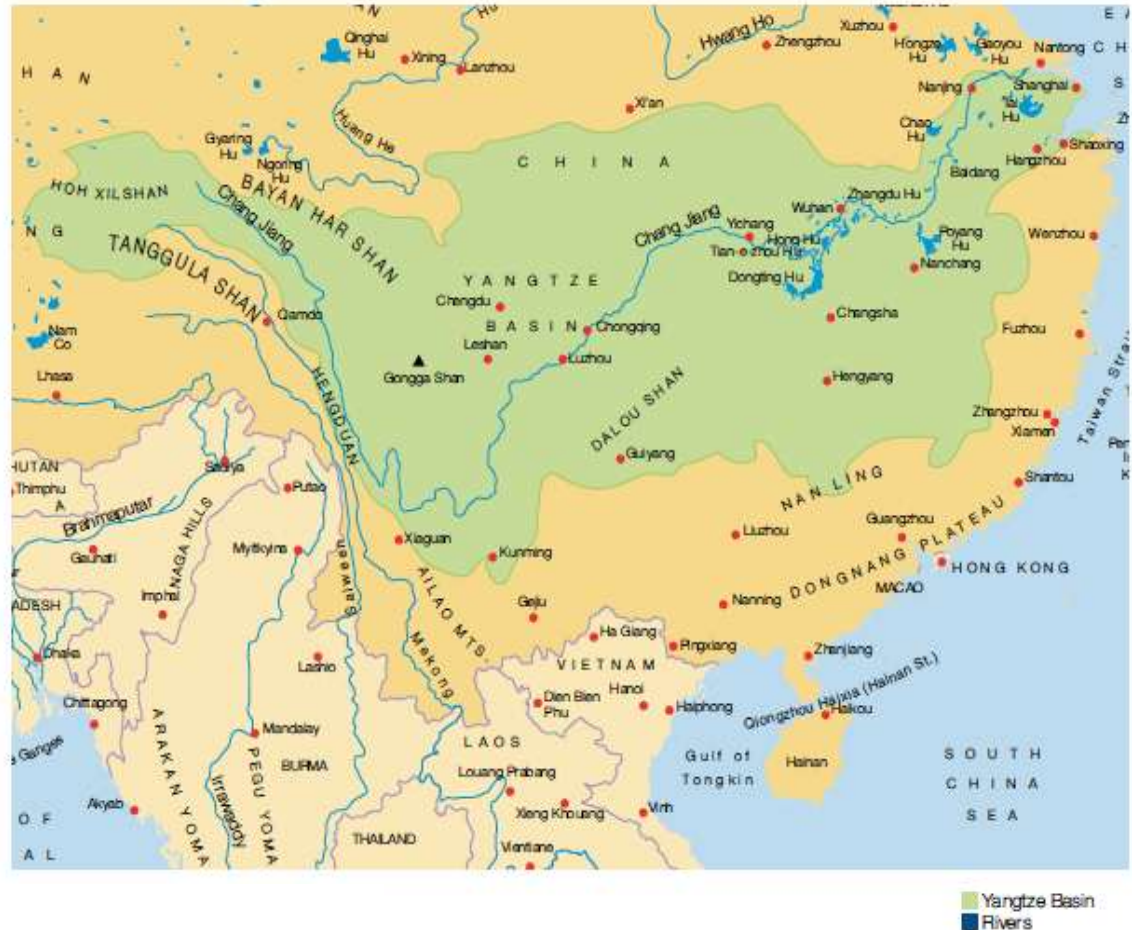


Removing earlier works:

- Reconnecting lakes to river Yangtze
- Wetland restoration

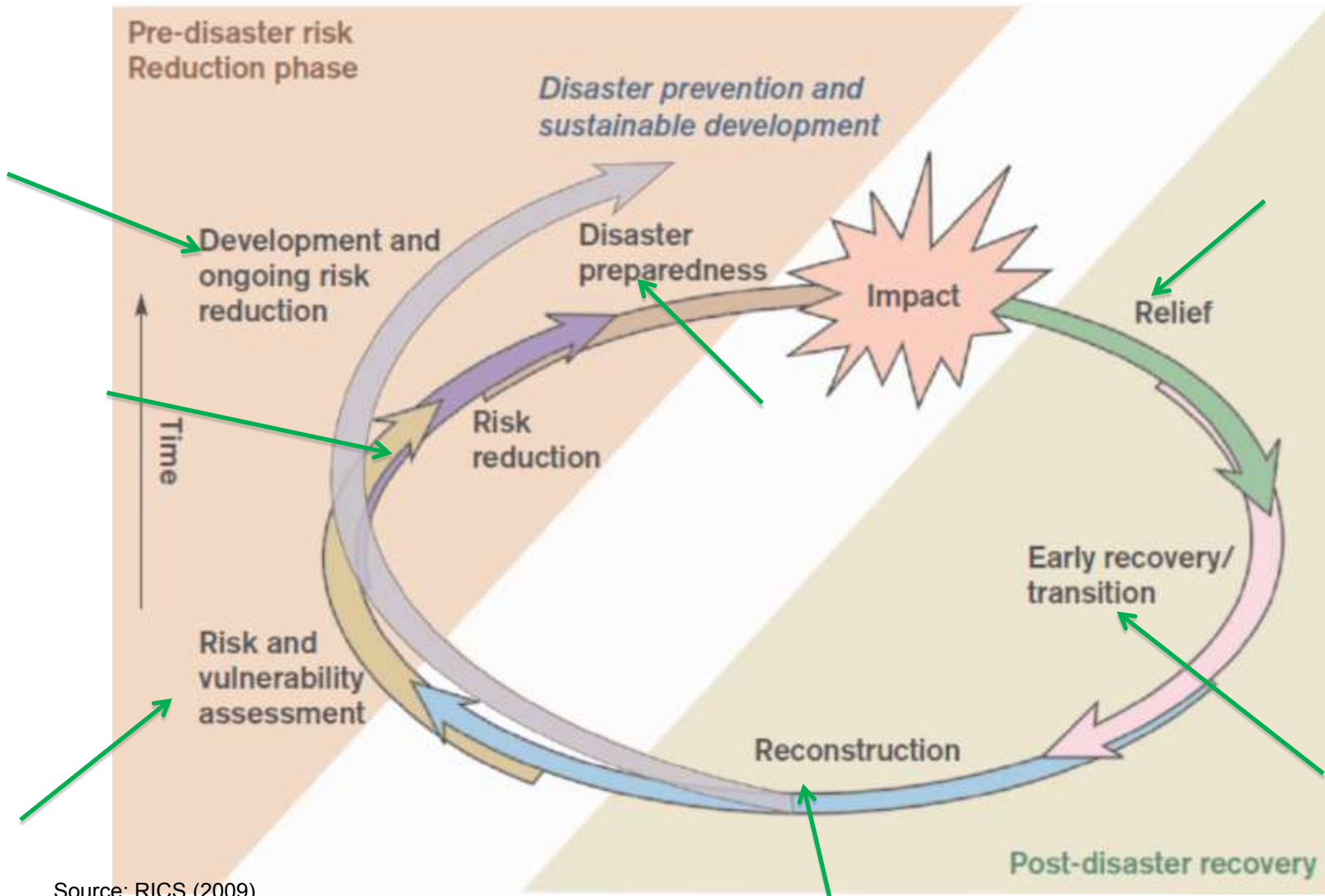
Results:

- Flood mitigation
- Increased income from fisheries
- Biodiversity
- Water quality (now drinkable level)
- Replication in other areas



Source: WWF, 2008

# Entry points for Ecosystem based DRR



Source: RICS (2009)



# EPIC – Ecosystems Protecting Infrastructure and Communities

5 countries:

- Avalanche modelling – Switzerland, Chile and Nepal
- Coastal storms – Thailand
- Landslides - China
- Landslides and river bank stabilization - Nepal
- Climate Change Adaptation (drought, floods and locusts) - Burkina Faso & Senegal



Ecosystems Protecting  
Infrastructure and Communities

## Challenges OR Opportunities?

- Convening stakeholders
- Establishing the knowledge base on ecosystems for DRR
- Standard method for documenting/demonstrating links between ecosystem degradation and increased exposure to risks
- Impact assessments on ecosystems
- Economic case





**Thank You**